

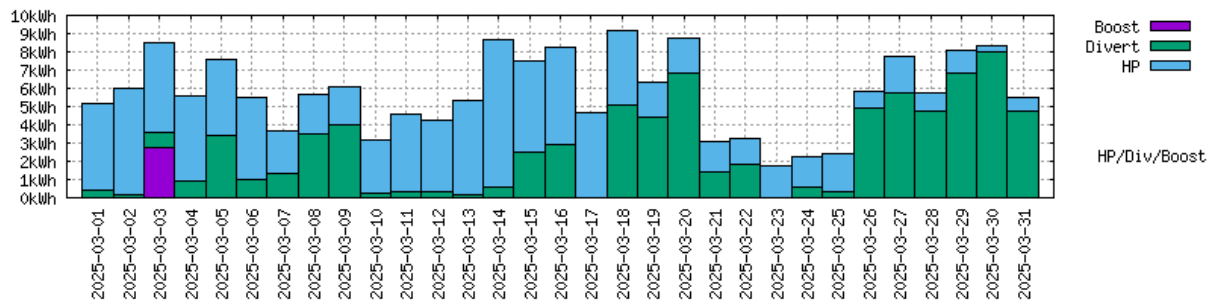
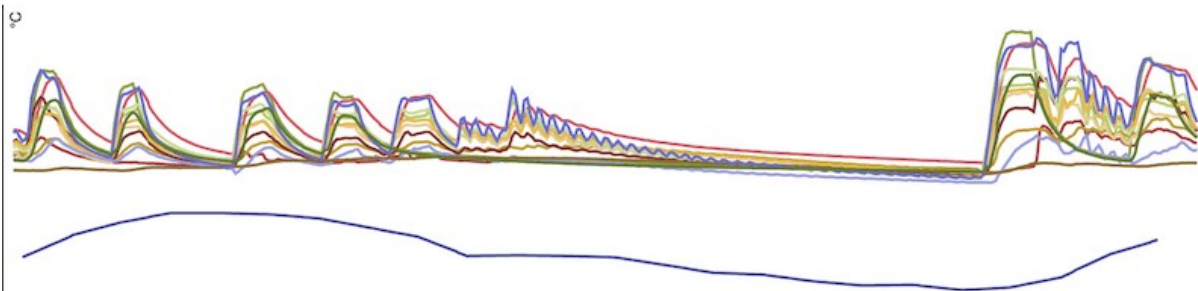
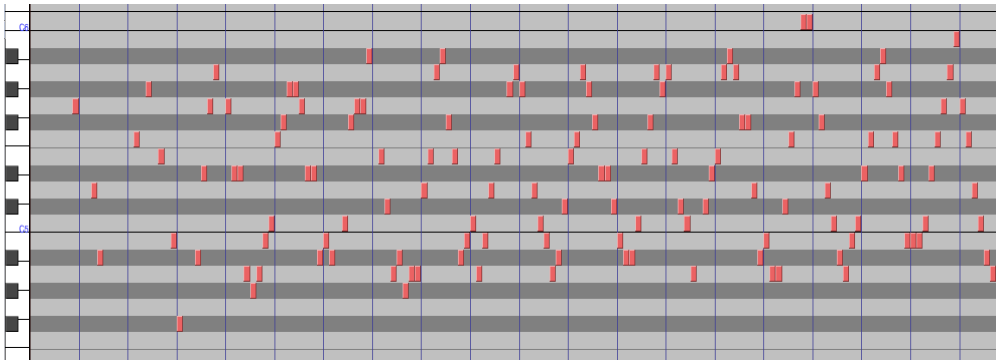
# Net Zero through Music\* and Microzoning

## **Improving UK Home Heating Decarbonisation**

An engineering tick-box is not much CoP!

(\*Not much music yet...)

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# Contents



- My motivation and background (Radbot)
- ~20M heat pump retrofits (+some district heat)
- Heat pumps are complex (dozens of params)
- Users need agency (as do installers)
- Music as a data feed (alongside graphs)

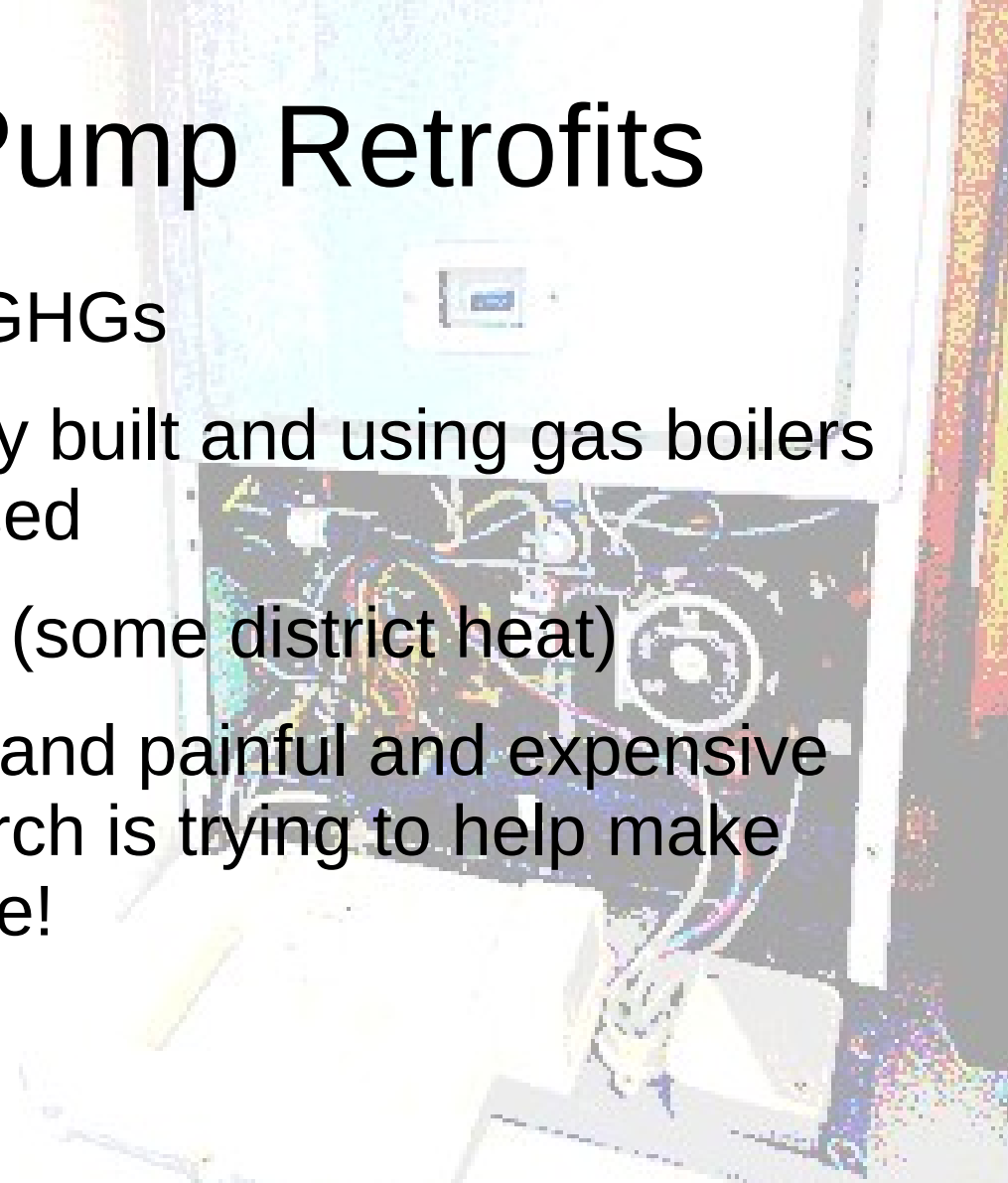
# Motivation and Background



- I created various start-ups including a very early UK Internet Service provider to Europe's first virtual VISA payment card, then Radbot
- Climate: Radbot is a smart stand-alone Thermostatic Radiator Valve, targeted at ~1bn European radiators to save 10–30% of heat demand and emissions.
- I want to continue fixing climate!

# 20M UK Heat Pump Retrofits

- Home heating ~15% of UK GHGs
- In 2050 ~20M homes already built and using gas boilers will need to have decarbonised
- Most will retrofit heat pumps (some district heat)
- Currently this is far too slow and painful and expensive ~12Y+£4k for **me**: my research is trying to help make this more like 2 days and free!



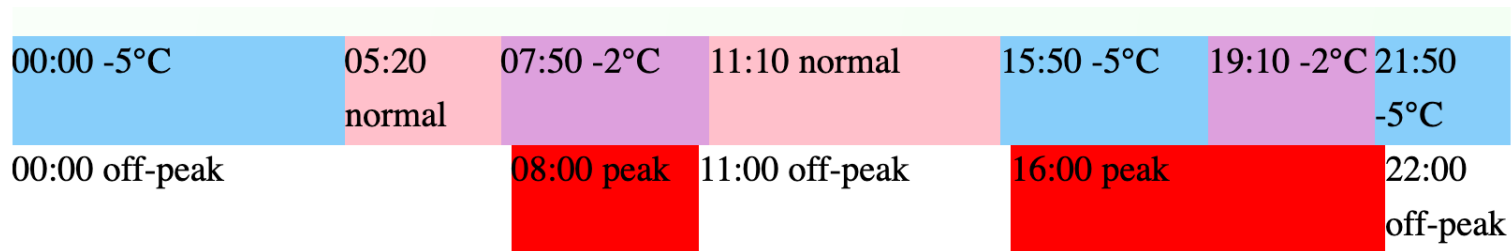
# Heat Pump Complexity

- Most installers and users already do fossil gas wrong! (Too big, too hot, poor 'folk physics')
- Heat pumps are **much** more complex to understand and run effectively, including with **TRVs**: [10.3390/su16114710](https://www.earth.org.uk/heat-pump-16WW-control.html) and my **current research strand**, and 'understanding first'
- I wrote ~21k words on my install, and ~7k words on my control setup, so far!  
[earth.org.uk/heat-pump-16WW-control.html](https://www.earth.org.uk/heat-pump-16WW-control.html)

# Users Need Agency



- Some people are just moving off coal!
- Many people are busy, or not very numerate or organised, and no one wants a relationship with their heating system
- The complexity with ToU (Time-of-Use) tariffs may be wicked – need to do guide users



# Let Music be the Feed of Data

- Not everyone 'gets' numbers or graphs or complex text, especially when in a hurry!
- Music is thought to be a very basic human skill, and comes with helpful conventions, eg genre
- Some examples of data sonification of house data to house music – mains water temperature, energy use and others!



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Thank you! Any questions?

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